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<120> SELECTIVE EXPRESSION IN FILAMENTOUS FUNGI

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<150> UK 0225390.4

<151> 2002-10-31

<160> 37

<170> PatentIn version 3.1

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<221> CDS

<222> (19)..(1674)

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Val Phe His Gly Trp Asp Val Gly Leu Ile Gly Gly Ile Leu Ser Leu
        30                  35                  40

cgg tca ttt caa gaa tat ctc ggg atc aat aca aaa aat gcc gtc aag      195
Arg Ser Phe Gln Glu Tyr Leu Gly Ile Asn Thr Lys Asn Ala Val Lys
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aaa gcg att cta gac gga aac atc atc tct gtg ctc caa gcc gga tgt      243
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Phe Phe Gly Ala Leu Gly Thr Gly Tyr Leu Ser Ser Arg Phe Gly Arg
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Arg Pro Cys Leu Ile Ala Ser Gly Ile Val Tyr Ile Thr Gly Gly Leu
            95                  100                 105

ctg caa tgc act gtc ggt ttg gga ccc tcg caa gct gct gct cta cac      387
Leu Gln Cys Thr Val Gly Leu Gly Pro Ser Gln Ala Ala Ala Leu His
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gtg ttc tat att ggc agg ttc att tct ggt atc ggt gtt ggg atg gtg      435
Val Phe Tyr Ile Gly Arg Phe Ile Ser Gly Ile Gly Val Gly Met Val
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tcc act ctc gtg cct ttg tat att tcg gag tgt gtc cct agg act ata      483
Ser Thr Leu Val Pro Leu Tyr Ile Ser Glu Cys Val Pro Arg Thr Ile
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cgc ggg cgc tgt act gga aca ctc caa ttt gcg act aac agt ggt ctg      531
Arg Gly Arg Cys Thr Gly Thr Leu Gln Phe Ala Thr Asn Ser Gly Leu
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Gly Glu Met Gln Trp Arg Ile Pro Leu Ile Ile Gln Met Ile Pro Ser
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ctc ttg ttc atc ata gcc atg ttt ttc caa cca gaa tcg ccg aga tgg      675
Leu Leu Phe Ile Ile Ala Met Phe Phe Gln Pro Glu Ser Pro Arg Trp
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ctt gtt gaa cac ggg aaa cac aag gaa gct gcg acg gta ctg gcg cgt      723
Leu Val Glu His Gly Lys His Lys Glu Ala Ala Thr Val Leu Ala Arg
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act ggc ggc aag gat gtt gat cat cct agt gtt gta cag aca ctg gag      771
Thr Gly Gly Lys Asp Val Asp His Pro Ser Val Val Gln Thr Leu Glu
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cag att cgc ctg gtc ggt gaa tcg agg gct gtt gcc ctg agg tgc ttt      867
Gln Ile Arg Leu Val Gly Glu Ser Arg Ala Val Ala Leu Arg Cys Phe
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ata cca ccg cta gtg atg ttc ttc cag cag tgg acg ggt aca aat gcc      915
Ile Pro Pro Leu Val Met Phe Phe Gln Gln Trp Thr Gly Thr Asn Ala
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atc aac ctt tat agt ccc gaa gta ttc cgt cat ctt gga atc cat ggc      963
Ile Asn Leu Tyr Ser Pro Glu Val Phe Arg His Leu Gly Ile His Gly
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acc agc ggg gct ctc ttc gct act ggt gtt tat ggc gtg gtg aag gtt     1011
Thr Ser Gly Ala Leu Phe Ala Thr Gly Val Tyr Gly Val Val Lys Val
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Trp Leu Gly Gly Tyr Ser Ala Thr His Gln Asp Gly Thr Val Ser Pro
    365                 370                 375

gcg agt cat gtt tcc att gtt gca ctc tac ttg tat ggt gca ttc ttc     1203
Ala Ser His Val Ser Ile Val Ala Leu Tyr Leu Tyr Gly Ala Phe Phe
380                 385                 390                 395

tcc atg gga tgg ggc cca tta cca tgg gtc gtc gct gga gag gtt gca     1251
Ser Met Gly Trp Gly Pro Leu Pro Trp Val Val Ala Gly Glu Val Ala
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cct aac cat gtc cgc tcc ttc gcc ctc tcc atc gcc gtt gga act cat     1299
Pro Asn His Val Arg Ser Phe Ala Leu Ser Ile Ala Val Gly Thr His
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tgg ctc ttc ggg ttt gtg ata tca aaa gtg acg cca att atg ttg gac     1347
Trp Leu Phe Gly Phe Val Ile Ser Lys Val Thr Pro Ile Met Leu Asp
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cgt atc aaa tat ggc aca ttc cta ctc ttc gga ttc tgt tgc atg ata     1395
Arg Ile Lys Tyr Gly Thr Phe Leu Leu Phe Gly Phe Cys Cys Met Ile
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gta gcg aca tgg gct tat ttc tgt cta cct gag aca agt ggg ttc gct     1443
Val Ala Thr Trp Ala Tyr Phe Cys Leu Pro Glu Thr Ser Gly Phe Ala
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ctg gag gac atc aaa tat ctg ttc gag cga gac gtc atc att cgt tca     1491
Leu Glu Asp Ile Lys Tyr Leu Phe Glu Arg Asp Val Ile Ile Arg Ser
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ttg cag gac gct ccc ggt gga aaa ata ttc ttg ggg ggg agg cgt gtg     1539
Leu Gln Asp Ala Pro Gly Gly Lys Ile Phe Leu Gly Gly Arg Arg Val
            495                 500                 505

gaa tct gta gct tcg ttg aaa gag agg cgc gtt gga gtc gct ggt gag     1587
Glu Ser Val Ala Ser Leu Lys Glu Arg Arg Val Gly Val Ala Gly Glu
        510                 515                 520

cag ggt gag aag ata act ggt cta aat tcg gaa ttg gaa gat gtt tcc     1635
Gln Gly Glu Lys Ile Thr Gly Leu Asn Ser Glu Leu Glu Asp Val Ser
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<211> 551

<212> PRT

<213> Agaricus bisporus

<400> 2

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Asp Val Gly Leu Ile Gly Gly Ile Leu Ser Leu Arg Ser Phe Gln Glu
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Tyr Leu Gly Ile Asn Thr Lys Asn Ala Val Lys Lys Ala Ile Leu Asp
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Gly Asn Ile Ile Ser Val Leu Gln Ala Gly Cys Phe Phe Gly Ala Leu
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Gly Thr Gly Tyr Leu Ser Ser Arg Phe Gly Arg Arg Pro Cys Leu Ile
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Ala Ser Gly Ile Val Tyr Ile Thr Gly Gly Leu Leu Gln Cys Thr Val
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Gly Leu Gly Pro Ser Gln Ala Ala Ala Leu His Val Phe Tyr Ile Gly
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Arg Phe Ile Ser Gly Ile Gly Val Gly Met Val Ser Thr Leu Val Pro
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Leu Tyr Ile Ser Glu Cys Val Pro Arg Thr Ile Arg Gly Arg Cys Thr
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Gly Thr Leu Gln Phe Ala Thr Asn Ser Gly Leu Met Leu Gly Phe Trp
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Val Asn Tyr Ser Val Ser Lys Asn Val Pro Phe Gly Glu Met Gln Trp
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Arg Ile Pro Leu Ile Ile Gln Met Ile Pro Ser Leu Leu Phe Ile Ile
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Lys His Lys Glu Ala Ala Thr Val Leu Ala Arg Thr Gly Gly Lys Asp
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Phe Gly Gly Ile Gly Gln Ala Leu Met Met Phe Trp Leu Gly Gly Tyr
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Ser Ala Thr His Gln Asp Gly Thr Val Ser Pro Ala Ser His Val Ser
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Ile Val Ala Leu Tyr Leu Tyr Gly Ala Phe Phe Ser Met Gly Trp Gly
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Pro Leu Pro Trp Val Val Ala Gly Glu Val Ala Pro Asn His Val Arg
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Val Ile Ser Lys Val Thr Pro Ile Met Leu Asp Arg Ile Lys Tyr Gly
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Thr Phe Leu Leu Phe Gly Phe Cys Cys Met Ile Val Ala Thr Trp Ala
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Tyr Leu Phe Glu Arg Asp Val Ile Ile Arg Ser Leu Gln Asp Ala Pro
485 490 495

Gly Gly Lys Ile Phe Leu Gly Gly Arg Arg Val Glu Ser Val Ala Ser
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Leu Lys Glu Arg Arg Val Gly Val Ala Gly Glu Gln Gly Glu Lys Ile
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attcgaagag cttgttgcca atgtcaaaaa aggcttttgg gcaaaccggg atggcttatc 420

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tgattatttg acccccgact ggaatcaaat tggctcttca aatttcaaac cttcaatgct 600

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ccccttttcct tcttcacttc accttg ctc taa ccg aaa gta aac ctt tcc gcg     173
                              Leu     Pro Lys Val Asn Leu Ser Ala
                              1                   5

atg aaa ttc tcc aat tct cta tcc gct ctc ctc gta tcc gca aat ctc      221
Met Lys Phe Ser Asn Ser Leu Ser Ala Leu Leu Val Ser Ala Asn Leu
    10                  15                  20

atg ttg gca gcg aag gcc tac aaa gga gat gcc acc ttt tat gat cct      269
Met Leu Ala Ala Lys Ala Tyr Lys Gly Asp Ala Thr Phe Tyr Asp Pro
25                  30                  35                  40

ggt ctg gga gct tgt ggc cat acg aat cag gct cat gaa ctt gtc gtt      317
Gly Leu Gly Ala Cys Gly His Thr Asn Gln Ala His Glu Leu Val Val
                45                  50                  55

gcc ctt cca tca gcc aaa tac ggc agc gga gac cat tgt tcc aag cat      365
Ala Leu Pro Ser Ala Lys Tyr Gly Ser Gly Asp His Cys Ser Lys His
            60                  65                  70

gtc ggc atc cac tac aaa ggc aaa tac gtg aaa gcc aaa gta gtc gac      413
Val Gly Ile His Tyr Lys Gly Lys Tyr Val Lys Ala Lys Val Val Asp
        75                  80                  85

aaa tgt ccc ggt tgt ggt tcg aac gat tta gac atc tca cca acc gca      461
Lys Cys Pro Gly Cys Gly Ser Asn Asp Leu Asp Ile Ser Pro Thr Ala
    90                  95                  100

ttc tct cac tta gcc agt caa gac ctc ggc cgt atc aaa gta gat tgg      509
Phe Ser His Leu Ala Ser Gln Asp Leu Gly Arg Ile Lys Val Asp Trp
105                 110                 115                 120

gaa ttt ctc tga tatcccattt tcaatccctt acacgaaatc tgtatttgta          561
Glu Phe Leu

gaagaaagtc atgacgttat atagatcact tacatagatc ttcaggtttt cgtagatcga    621

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Asp Ala Thr Phe Tyr Asp Pro Gly Leu Gly Ala Cys Gly His Thr Asn
35 40 45

Gln Ala His Glu Leu Val Val Ala Leu Pro Ser Ala Lys Tyr Gly Ser
50 55 60

Gly Asp His Cys Ser Lys His Val Gly Ile His Tyr Lys Gly Lys Tyr
65 70 75 80

Val Lys Ala Lys Val Val Asp Lys Cys Pro Gly Cys Gly Ser Asn Asp
85 90 95

Leu Asp Ile Ser Pro Thr Ala Phe Ser His Leu Ala Ser Gln Asp Leu
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<223> n is an unknown nucleotide

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aactgtcata aacccgtgtt caaaggggaa aaacaggcag agagaaggaa gggacgcgtc 240

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ataggacatc ggtcaacgaa tttcccgctt ctgtcccggt gccccagccc aaagaacctg 2700

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gatgattgat ccanggttca ag 2782

<210> 9

<211> 984

<212> DNA

<213> Agaricus bisporus

<400> 9

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cacagtaaaa tcacaaaaac tcatactttg agagatatga cttctcgact tgcgccttcg 540

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gcactcctgc atgatcaccc cacgcggccg cgttttatcg gacatataag gaacaagatt 780

ccataggtag tggatcccct actccacctc ccgcctactt ttataccaac cccaaatcca 840

aaggttgaaa aaaaaatttc gacaaggatt tatatatcca tccatccgcg acactttctc 900

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taaccgaaag taaacctttc cgcg 984

<210> 10

<211> 1270

<212> DNA

<213> Agaricus bisporus

<220>

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<222> (1262)..(1262)

<223> n is an unknown nucleotide

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aatatttatt tacagttttt ctgttttttg ttttattgtc gcttggatat aaggtggtat 180

actttgatat gattgcctac acacatatat caacacagtt ttagttatat caacatcaaa 240

acatcagtca aggaaaacaa agagcgaacg ataaacatca gcacaagtat gtcagattat 300

ggtccaagaa cgcgaaaaga agttcgcaaa agaacagaac actatcgaaa agtgcagata 360

cataggtcac acaattaacg acttcccgga atagttccct ccaacctctt atcgcgacta 420

ctagcaccaa cggtaacacc aaaagtacct tcaggcctcc tccatccctg tgcattcaca 480

tcccaaatac tcaaatcata cctcgacaag gtcatttta cattcctagt ctctccaggg 540

ccaatcggta cagagtcgaa accgcgtagc acggaaggag gttctccagc agattcaggg 600

aagttaatgt agagttgggg agactcggca cccaaaagtc gaccggtatt cttgacgttg 660

aaggaaacct cgtacaaagg acgatggagc ctggaaaccg gtcagcgtga aattgttgrt 720

tagagaaccc tcggcgctta ccaagaagcg atagaaccac cttcaacttg cgggcttgca 780

tgtccttgat cccattccct agccgcatca acttctctac ctttgacgtg cactttctta 840

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ggctcaatgc cattctgcaa gagaaaattc agtaagcgaa cgtttccgag agaatcaagc 960

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tagaaagaat atctcgaata ccatctccgg ggataacttg ggccgaataa tcttcaatcc 1080

gtttggcaat ggtatatgga agccttccgg atgggttcca atctccatat aggacatcgg 1140

tcaacgaatt tcccgcttct gtcccggtgc cccagcccaa agaacctgga aatagtcaac 1200

accggcgttc atcacacaag tagaagatac gaacagcagt gacattagga tgattgatcc 1260

anggttcaag 1270

<210> 11

<211> 835

<212> DNA

<213> Agaricus bisporus

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aagcagcagg gtgtgtgaca tagcgggaag aaagggtgat gatgatgaga acgaggggta 120

cgatgaggac ggcccatctg aattgacggc caacgcgacg tttccggtcg tgagaggaca 180

tggcaaagga gacgggggga ggggcgaggg tggcggagga ggtgctcgtg ccgaattcgg 240

cacgagctca ccatgaaatt cgcaactgct ctcctcgcct gccttactgc tgctgctagc 300

gctcarcgcg tcctcatcgg atcccctcct gaccaagcaa atctttctgc tggccagaac 360

actacgattc aaattgtact cccgaatttc caatcgtctt cgcaagaagt tgcggtagtg 420

cttgggatca cgtcctgcgc cgctgctccc tgccctgctc cagccgatac gatgggtcgt 480

atcctttaca gcggtcattt caacccgcag agagatcctg caatgcccgc aatgcaagcc 540

tacgaaaatt tcacggtctt cttgccggag aacctgccta agggcgcggc gcagattaac 600

gtttaccatg tcgcacttat cggggccggt ctcatgccat ggaacgagac gttgtccacc 660

acagctttga ttcagtaatt ccatcaggat ttgaaatgga cctttagtag tttactgttt 720

tgctatcgaa cgattcgrat aattacctga gatcaggtcg gtgactgagg cccgtcggag 780

tgctaccata atggcataat aaaattatac tcagctgaaa aaaaaaaaaa aaaaa 835

<210> 12

<211> 770

<212> DNA

<213> Agaricus bisporus

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cttttgggca aaccgggatg gcttatcgag cctccagccc cagcagctaa catcgggcag 180

agaaggaaaa tcatcggcgt tgaattatca ccgtttggtt cctgagtcat ctggagatgt 240

acgcagatgg tgataccgtg tttgattggc gccgttggag aagaactata ttattcgatg 300

gatttttgt tcgagtttga cacagagaca gagatgatag aggtttgcta ttgatgtagc 360

aaaggatcat ttgacgatgg cgcatagggc gatggttatc tttatgtctg gaattataat 420

atgtattgtt ccccactttt cttttatatt tattaatact aattggaagt ttcagttgtt 480

ggatgagcaa agttggtgca gatagaaact agaattcgga ttcccatatc tgaggtacct 540

tttccttccg ctggcaatcc tggccacttc gacgtggtga cgcagagggc gcgtgctatt 600

gttagcacat gccatatgga tcgacgttgc ctctcgtact tcgcgcctag gctcgctcat 660

gcctcgatgc atctttcaat tcgggcgttg cgtctcccag gtgcctgtta aaagggcgaa 720

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<210> 13

<211> 703

<212> DNA

<213> Agaricus bisporus

<400> 13

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cgcactgctc tgactcgcat aaccttaaaa cgcgtggacc ccctgttcgg acggccggtt 180

caggatccgg ggctcaggac acagtaaaat cacaaaaact catactttga gagatatgac 240

ttctcgactt gcgccttcga tggacggaca aattatcccc aggtaccgga tctgtgacac 300

cgaattagtg cgcgatatta tatatgactt ttgacgggcg tctcatacga ccgctcaagt 360

ccttggggat ggagaatgtc acctcctggt ccaccgggcc cagagcatta cccggtcatt 420

aatctagcgc ttcttgcatg cactcctgca tgatcacccc acgcggccgc gttttatcgg 480

acatataagg aacaagattc cataggtagt ggatccccta ctccacctcc cgcctacttt 540

tataccaacc ccaaatccaa aggttgaaaa aaaaatttcg acaaggattt atatatccat 600

ccatccgcga cactttctcg tttgattcta tcccttagtc tttccttctc ccccttttcct 660

tcttcacttc accttgctct aaccgaaagt aaacctttcc gcg 703

<210> 14

<211> 486

<212> DNA

<213> Agaricus bisporus

<220>

<221> misc_feature

<222> (4)..(9)

<223> Restriction site for KpnI

<220>

<221> misc_feature

<222> (477)..(482)

<223> Restriction site for NarI

<220>

<221> Intron

<222> (277)..(328)

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<222> (415)..(468)

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tgctgtttcc gcgtctcgaa tgttctcggt gtttaggggt tagcaatctg atatgataat 180

aatttgtgat gacatcgata gtacaaaaac cccaattccg gtcacatcca ccatctccgt 240

tttctcccat ctacacacaa caagcttatc gccatggttt gtctctcgct tgcataccat 300

ccagcagctc actgatgtcg acttgtaggt taaagttgga atcaacgggt aagtgttttt 360

gtcgtcgcgc tgtggttccg gatcatctca gactttgggt gtcttgcagt ttcggtgagt 420

gaccaccctg cattctggct atatgcgtga tactgaccat cgctcaaggt cgtatcggcg 480

ccggcc 486

<210> 15

<211> 57

<212> DNA

<213> Agaricus bisporus

<220>

<221> CDS

<222> (1)..(57)

<223>

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1 5 10 15

gct gtt ggt 57
Ala Val Gly

<210> 16

<211> 19

<212> PRT

<213> Agaricus bisporus

<400> 16

Met His Phe Ser Leu Ser Phe Ala Thr Leu Ala Leu Leu Val Ala Ser
1 5 10 15

Ala Val Gly

<210> 17

<211> 45

<212> DNA

<213> Agaricus bisporus

<400> 17
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<210> 18

<211> 47

<212> DNA

<213> Agaricus bisporus

<400> 18
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<210> 19

<211> 48

<212> DNA

<213> Agaricus bisporus

<400> 19
gtacgttgaa tcgtacaaga aagtgtaatc atcctgactt tctatcag 48

<210> 20

<211> 62

<212> DNA

<213> Agaricus bisporus

<400> 20
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ag 62

<210> 21

<211> 51

<212> DNA

<213> Agaricus bisporus

<400> 21
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<210> 22

<211> 52

<212> DNA

<213> Agaricus bisporus

<400> 22
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<210> 23

<211> 63

<212> DNA

<213> Agaricus bisporus

<400> 23
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tag 63

<210> 24

<211> 48

<212> DNA

<213> Agaricus bisporus

<400> 24
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<210> 25

<211> 61

<212> DNA

<213> Agaricus bisporus

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<210> 26

<211> 46

<212> DNA

<213> Agaricus bisporus

<400> 26
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<210> 27

<211> 53

<212> DNA

<213> Agaricus bisporus

<400> 27
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<210> 28

<211> 48

<212> DNA

<213> Agaricus bisporus

<400> 28
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<210> 29

<211> 53

<212> DNA

<213> Agaricus bisporus

<400> 29
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<210> 30

<211> 52

<212> DNA

<213> Agaricus bisporus

<400> 30
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<210> 31

<211> 50

<212> DNA

<213> Agaricus bisporus

<400> 31
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<210> 32

<211> 45

<212> DNA

<213> Agaricus bisporus

<400> 32
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<210> 33

<211> 56

<212> DNA

<213> Agaricus bisporus

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<210> 34

<211> 55

<212> DNA

<213> Agaricus bisporus

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<210> 35

<211> 690

<212> DNA

<213> Agaricus bisporus

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ctagaagaga acaaaacgtc actatttgct caatgcagga tgcacctggc gagataatat 180

tcttgcggtg aagtcgaaca acgtctgtag tcctgtaaaa atatacagtg agtagaggga 240

tgatgccgat gtggaaggaa gcaaccgatt acgattcgga tttggccatg agacggccgc 300

tcttgaacag accaacaata tccctttaaa tttaatacag aattactcaa tatgcttcca 360

agtatttcga ttcctcgaat tccgtctggc cgcggcatga gcatggacag gcggacagaa 420

gaggctatcg ttgtattgct tcatcagcga ccctgactag tgacttcagg catgatcatg 480

cgcttagcaa tctgtccctt caagtcgagt ccccgaattc aacagcttca acaagtcgtg 540

attatttgac ccccgactgg aatcaaattg gctcttcaaa tttcaaactt caatgcttca 600

tgcttcatgc gtcatgacgc aagctgtcaa ttttcatttt ccagttcggt cccattctca 660

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<210> 36

<211> 910

<212> DNA

<213> Agaricus bisporus

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aatatttatt tacagttttt ctgttttttg ttttattgtc gcttggatat aaggtggtat 180

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ggtccaagaa cgcgaaaaga agttcgcaaa agaacagaac actatcgaaa agtgcagata 360

cataggtcac acaattaacg acttcccgga atagttccct ccaacctctt atcgcgacta 420

ctagcaccaa cggtaacacc aaaagtacct tcaggcctcc tccatccctg tgcattcaca 480

tcccaaatac tcaaatcata cctcgacaag gtcattttta cattcctagt ctctccaggg 540

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aagttaatgt agagttgggg agactcggca cccaaaagtc gaccggtatt cttgacgttg 660

aaggaaacct cgtacaaagg acgatggagc ctggaaaccg gtcagcgtga aattgttgat 720

tagagaaccc tcggcgctta ccaagaagcg atagaaccac cttcaacttg cgggcttgca 780

tgtccttgat cccattccct agccgcatca acttctctac ctttgacgtg cactttctta 840

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<210> 37

<211> 800

<212> DNA

<213> Agaricus bisporus

<220>

<221> misc_feature

<222> (5)..(9)

<223> Restriction site for BglII

<220>

<221> misc_feature

<222> (790)..(795)

<223> Restriction site for KpnI

<220>

<221> misc_feature

<222> (290)..(290)

<223> n is an unknown nucleotide

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<222> (498)..(498)

<223> n is an unknown nucleotide

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<222> (589)..(589)

<223> n is an unknown nucleotide

<400> 37

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gttcaggatc tcgataagat acgttcattt gtccaagcag caaagagtgc cttctagtga 180

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agctcatctg caatgcatta atgcattgac tgcaacctag taacgccttn caggctccgg 300

cgaagagaag aatagcttag cagagctatt ttcattttcg ggagacgaga tcaagcagat 360

caacggtcgt caagagacct acgagactga ggaatccgct cttggctcca cgcgactata 420

tatttgtctc taattgtact ttgacatgct cctcttcttt actctgatag cttgactatg 480

aaaattccgt caccagcncc tgggttcgca aagataattg catgtttctt ccttgaactc 540

tcaagcctac aggacacaca ttcatcgtag gtataaacct cgaaatcant tcctactaag 600

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